NUMERACY SKILLS

Numeracy Skills Development

The process of development in children involves a need to classify what is going on around them and to identify patterns in what they experience. Children learn to fit things together and take them apart, as their spatial skills develop; they re-arrange and shape objects; they observe and describe things from different spatial views - this is something that can only be learned through experience.

The manipulation of the concrete *6 Bricks* in this section aims to exercise and consolidate:

- space, spatial relationships, shape, colour, classification
- the awareness & concept of numbers, symbols, operations and relationships
- one-to-one correspondence, seriation, estimation, counting, comparisons
- patterns, functions & algebra
- directions
- measurement
- data handling
- problem solving

Patterning, sequencing and sorting help children to develop a sense of continuity in their world. Daily mathematics activities with *6 Bricks* will help children to acquire higher order thinking skills and develop numeracy skills.

"Say! Look at his fingers!
One, two, three ...
How many fingers do I see?
One, two, three, four,
Five, six, seven, eight, nine, ten.
He has eleven!
Eleven! This is something new.
I wish I had eleven too!"

From Dr Seuss -
"One Fish, Two Fish, Red Fish, Blue Fish"

TRUE OR FALSE

- The teacher uses the 6 bricks to determine the answers in an assessment exercise, using two different colours as an answer to True or False questions. The child holds one coloured brick in each hand. E.g. Green in right hand indicates the answer is "True" and red in the left hand indicates the answer is "False".
- The teacher asks a question and the children answer by holding up the brick indicating their choice of answer. The teacher has a very quick way of determining if the children are correct.

Variations:
- Bricks could be used in the same manner for multiple choice answers.

COLOUR SORT

- Children work in groups of 4 - 6 and place their bricks randomly in the middle of the play area.
- Teacher calls out one colour. The children must sort the bricks by collecting the bricks of that colour.
- Repeat this activity but call out 2 / 3 / 4 colours. Children work in their groups to sort the bricks according to colour.

Variations:
- Working in groups of 6, each child brings only 4 random bricks to the play area.
- The bricks are placed in the middle of the play area.
- Teacher asks the children to collect and sort the colours.
- Children must then draw what they have collected and sorted.
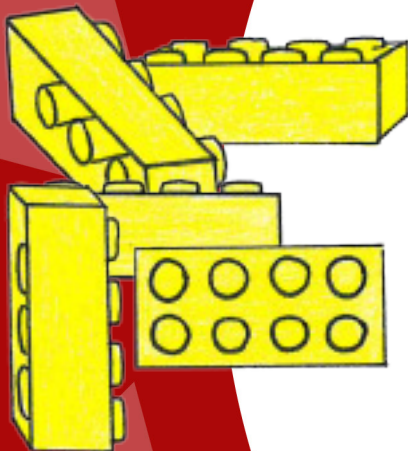
CLASS PATTERN

- The whole class works together to create a pattern.
- One child starts the process by placing any brick on a base plate / tray and then passes this to the next child.
- This child then adds a brick to that one, and passes the plate on.
- Each child adds a brick with the idea of a pattern emerging at the end.
- The pattern plan may change a few times as each child adds a brick according to the way he / she is thinking.
- A pattern should be evident by the time the plate reaches the last person.

WHAT iS MY NUMBER?

- Work with a partner, each child has their 6 bricks, but hidden from their partner's view.
- Child No. 1 picks any number from his / her 6 bricks and places those bricks to one side, also out of view of the partner.
- Child No. 2 is allowed to ask 3 questions to try and find out how many bricks No. 1 set aside.
- E.g. Is the number more / less than 5? Is it the same age as me? Etc.
- After asking 3 questions, Child No. 2 must guess the number - if correct, he collects one of No. 1's bricks.
- Swop over and repeat the activity.
- Whoever gets all the other's bricks first, is the winner.
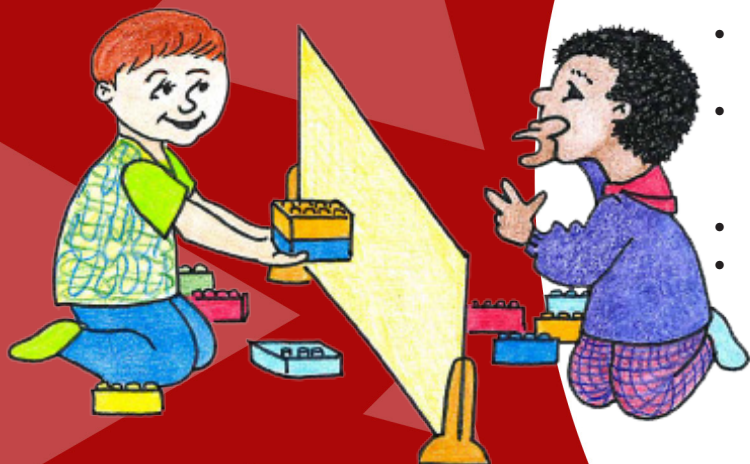
SORTER

You will need clothes pegs for this exercise.

- Children work in groups of 6. They place all their bricks in the middle of the group.
- Each child must have a clothes peg.
- Before the activity begins, each child must select one of the 6 brick colours.
- When the teacher says "Go", the children must use the clothes peg to pick up their specific colour bricks. (Give them 15 seconds to collect.)

Q: *Can you estimate how many bricks you collected?*

Q: *Can you count how many bricks you collected?*

Q: *How many did your whole group collect together?*

Q: *Can your group build one tower with those bricks?*

Q: *How many bricks are left in the middle?*

Q: *Which group has the tallest / shortest; most / least?*

Q: *Can you estimate, then count?*

ESTIMATION

- Children work in groups of 4 - 6 and place all their bricks in a pile together.

Q: *How many bricks do you think there are? (estimate)*

Q: *Estimate how many red / blue / green etc. bricks are in the pile?*

Q: *Can you group the bricks in 2s, 3s, 4s, 5s, 6s?*

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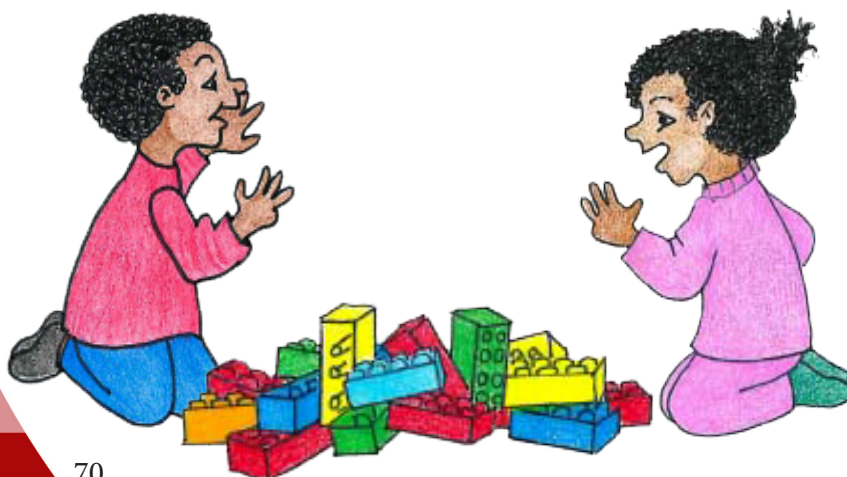
GUESTIMATE

- Children work in groups of 4 with their 6 bricks in front of them.
- When the teacher says, "Go", each child picks up a few of their 6 bricks and throws them into a pile in the middle.
- Teacher asks the children to look quickly at the bricks in the middle.
- Estimate how many yellow / green / blue / red / orange / bricks there are; then count to see how accurate you were.
- Teacher calls out any 2 colours; children look quickly and estimate their total number - count and check.

Variations:

Teacher calls out any 3 or 4 colours. Repeat the activity.

Q: *Can you estimate how many bricks there are altogether?*

- Count and check your answers.
- At the end of the activity, children collect their 6 bricks again.

- Repeat the activity, children throwing in a different random number of bricks each time.
- All have a quick look at the pile.

Q: *How many bricks are lying studs up / studs down?*
Q: *How many bricks are lying with studs on the side?*
Q: *Can you estimate then count?*

- Children throw in random numbers of bricks
- Teacher calls out a colour name, e.g. "yellow"
- The children must call out how many yellow bricks they see in the pile.
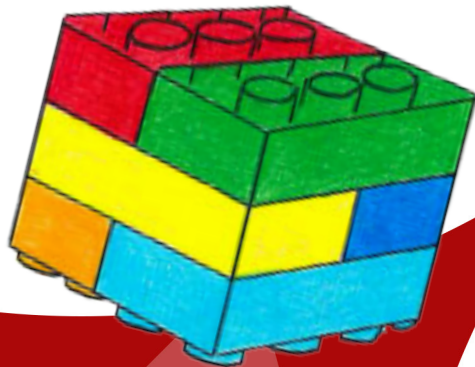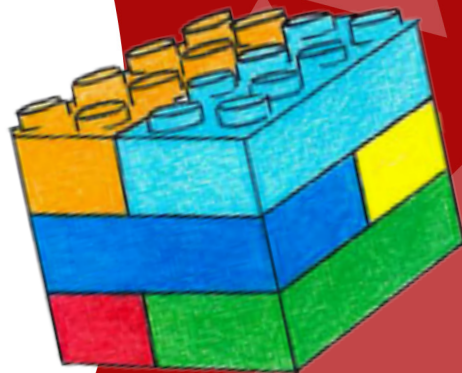- Repeat with other colours.
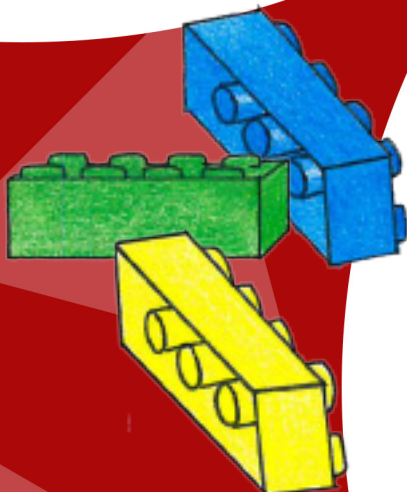
CREATE A CUBE

- Children have their 6 bricks randomly placed on their desk, in front of them.

Teacher instructs:
- Use all your bricks to build a cube, as quickly as you can; hold your cube so that the studs are at the top.

Q: How many colours do you see on top?
Q: What are these colours?
Q: Which colour is on your L / R?
Q: What colours are in the middle / at the bottom?

- Count the studs you see on top (touch each stud as you count).

Q: How many are there?
Q: If there are 16 studs on top, how many studs do you think there are in this cube?
Q: What do you see at the bottom of your cube if you turn it over?
Q: How many holes can you count? (1 - 1 correspondence)
Q: If there are 6 holes at the bottom, how many holes are in this cube?

HANGING AROUND

- Children see how many bricks they can hang off the edge of their desk. Start with one brick going off the edge of the table.
- Add a brick to go down - decide where to add the next brick in order to balance the model on the edge of the desk.

Variations:
- Work with a partner and see how far under the table you can build using the combined bricks.
- Work in threes - see how far you can add bricks under the table until it all collapses.

Q: *How many bricks do you need on top of the table to balance your model?*
Q: *What is the least number of bricks on top of the table in relation to the length of the model below the desk?*
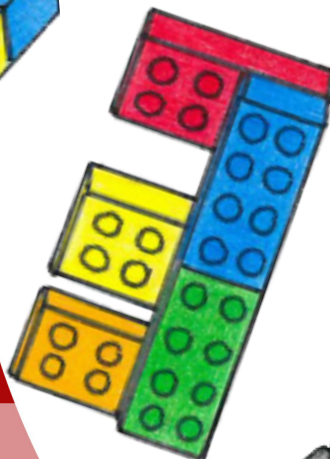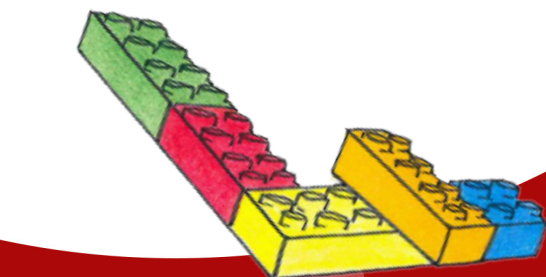
BUILDING NUMBERS

- Children work individually with their 6 bricks.
- Children build any numbers using their 6 bricks.
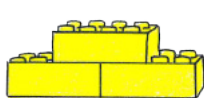
Variations:
- Work with a partner and build the numbers using the digital format / lines.

NUMBER FUN

You will require number cards for this activity.

- Teacher hides these models around the classroom.

- Each child in the group picks a number card from the box - it could be a numeral / number name / dot - whatever the teacher needs to reinforce.
- Teacher asks the children to go and find a DUPLO model that has the same number of bricks as the number on their card.
- Come back to the mat and arrange your models from smallest to biggest; biggest to smallest.
- Children swop their cards, and then match the card to the model with the number of bricks.

HOW MANY WAYS?

- Children work with a partner.
- Start with 2 DUPLO bricks on an A4 page.

Q: *How many different ways can you arrange 2?*

- Do the same with all the numbers to 10. See how many different ways you can arrange 3 / 4 / 5 / 6 bricks.

VERTICAL PATTERNING

- Children work in groups of 4 - 6. Each of their 6 bricks is placed in the middle of the play area.
- One child begins a vertical build using 3 bricks in a pattern.
- The model is passed to the next child who copies the pattern but adds one more brick.
- Model is passed to other group members who all add one more brick.
- See whose model is the last to topple over.

Variations:
- When creating the vertical pattern, restrict / increase the number of studs that must be covered.
- Build the pattern without using any studs.
- Encourage the children to make up their own rules for the activity.
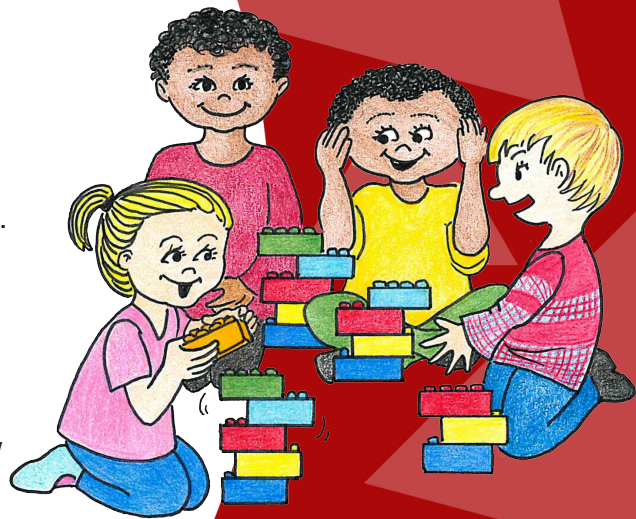
NUMBER NOTE

For this activity the teacher will need a cloth to cover the bricks.

- Children work in groups of 4, with 6 bricks in front of them; each child throws a random amount of bricks into the middle.
- Teacher calls out a colour name, e.g. "orange"; then covers the pile with a cloth.

Q: Can you remember how many orange bricks are in the middle?
*Q: Are they lying studs up / down / sideways?*

Variations:
- Work in groups of six.
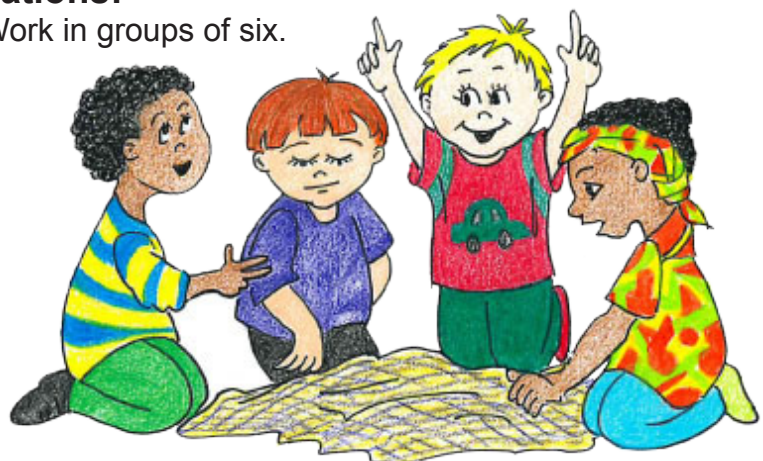
BUILD THE SHAPE

- Children work in groups of 4 - 6 and place their bricks in a pile together. They will need some string / wool.
- The teacher asks the children to build the following shapes in their group:
  square, rectangle, triangle, rhombus (kite), circle, cube

Q: How many sides does the shape have?
Q: Are the sides straight or curved?
Q: Can this shape roll or slide?
Q: Is the shape symmetrical?
Q: How many lines of symmetry does the shape have?
Q: Can you show the lines of symmetry using string?
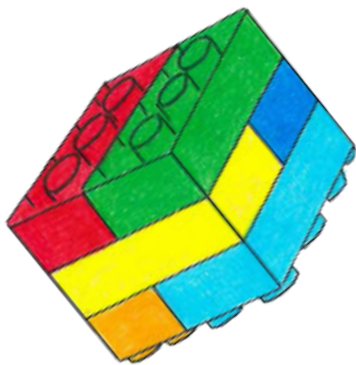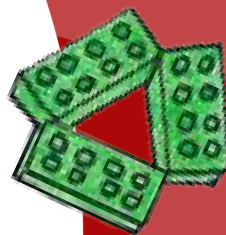
SPACE AND SHAPE

- Children work individually with their 6 bricks. They will also need a piece of paper on which to trace around the bricks.
- Child selects 3 / 4 / 5 / 6 bricks and creates a design / pattern / picture with the bricks.
- Child then carefully traces around the edges of the brick design.
- Remove the bricks from the design to create a 2D template.
- This design can now be swopped with a friend. The friend must place his bricks over the design template correctly.

Variations:
- Using one brick trace around it. Repeat this action all over the page. Lines must intersect. Once the page is full of shapes the child must look and colour in certain shapes to create a picture.
- Children trace around the brick shape all over the page, intersecting lines. They then design a pattern or create a picture.
- They could also create their own colour by number picture.
- Swop your creation with your friend's - colour it according to the numbers indicated.
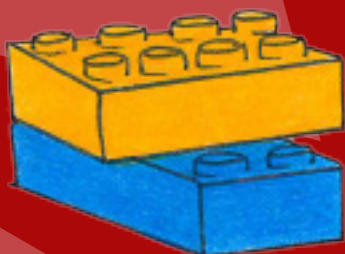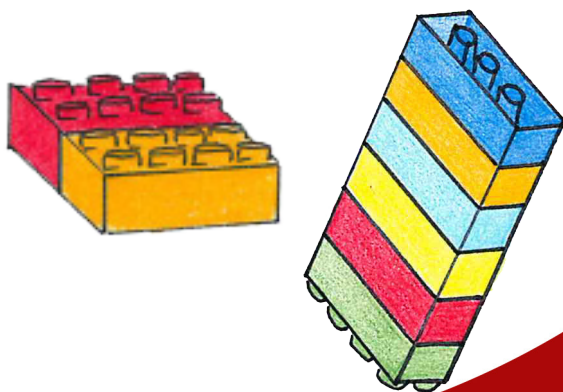
SPACE AND SHAPE

- See how many different ways you can build a square / rectangle using your 6 bricks.

Q: What other shapes can you build using your bricks?

Q: Can you invent your own shapes and name them?

POSITION AND DIRECTION

You will need paper, crayons, and white boards.

- Children work individually with their bricks placed randomly in front of them.
- The teacher gives instructions to build a 2 brick model; e.g. Place the orange brick on top of the blue brick to form a cross.
- Ask the children to look at the model from the top, side and below.
- Children can explain what they see.
- Ask the children to draw a bird's eye view, the side view and the view from the bottom.

Variations:
- Children work individually or in pairs and build different models with 3 / 4 / 5 / 6 bricks. They must then draw the different views showing position of bricks.
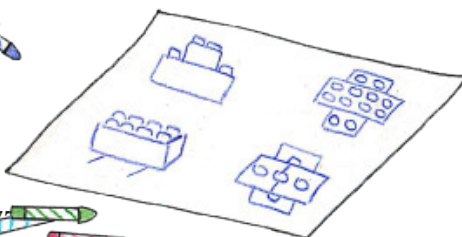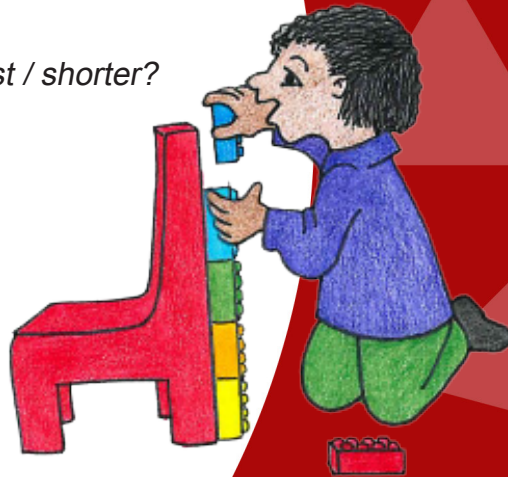
HOW HIGH & HOW LONG?

- Children work in groups to measure the height / length of objects. Children stack their bricks vertically to measure height / place horizontally to measure length.

Q: *Which is tallest / taller / shortest / shorter?*
Q: *Which is longer / longest?*
Q: *How many bricks were used?*

MORE MEASUREMENT

- Children use their 6 bricks as a measuring tool to measure various objects in the classroom. E.g. Measure and work out the width of a text book using your bricks.
- Children can work in pairs to create a measuring tool / ruler using their bricks. This ruler can then be used to measure objects in the classroom or outside.
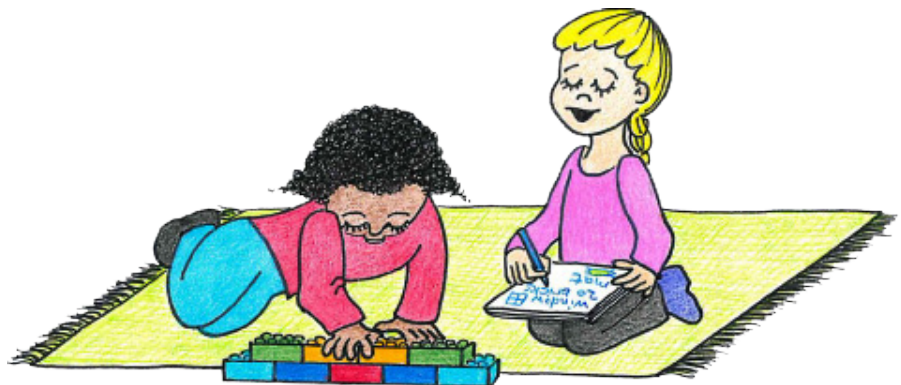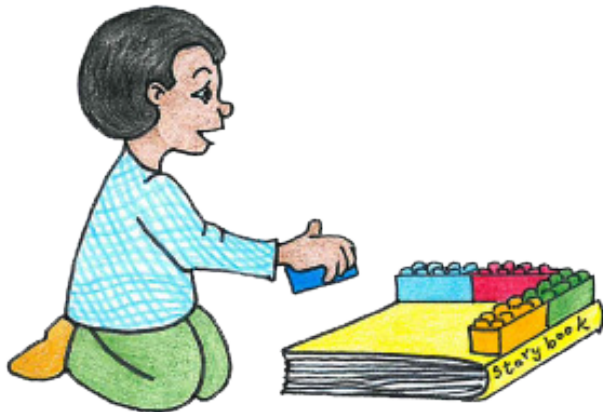
PERIMETER AND AREA

- Children work in groups to measure the perimeter / area of a structure or object using their bricks.
- When working with area, measure regular shaped objects or structures.

Q: How many bricks are needed to work out the perimeter of this textbook / square / desk / etc.?

Q: How many bricks will cover (area) the textbook / square / desk / etc.?

ORDINAL NUMBERS

- Children have their 6 bricks randomly spread out in front of them.
- Teacher tells them they are to connect from L to R.
- Teacher calls out each colour in turn and children connect them as she calls out the colour names.
- Teacher holds up her 6 brick colour order and children check to see if their order is exactly the same.
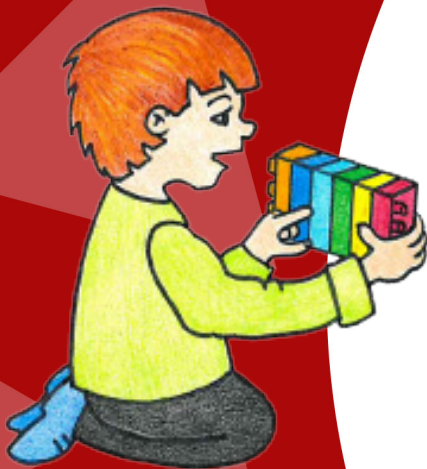
Q: What colour is 1st / 2nd / 3rd /… last? (starting from L each time)

Q: Put your finger on the 5th / 4th / 3rd / etc. brick.

Q: What colour lies between the 1st and 3rd bricks?

Q: What colour comes after / before the 4th brick? Etc.

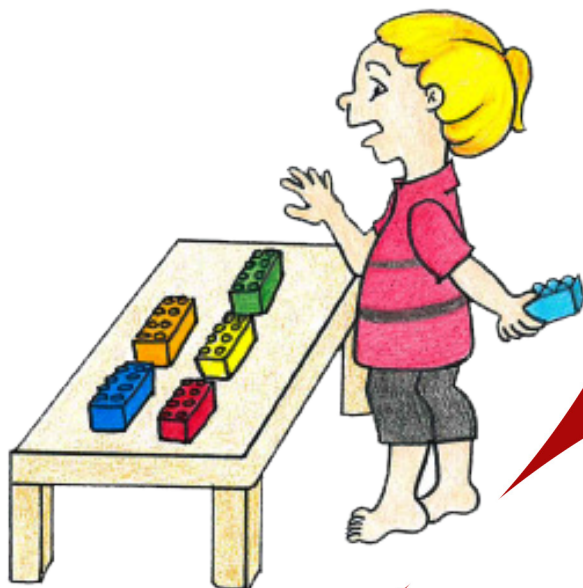- Continue in this way, asking related questions.

BRICK MANIA

- See how many different ways you can arrange your 6 bricks.
- Arrange your 6 bricks on your desk in any way
- Remove one.

Q: *How many bricks are left?*

- Remove 5 / 4 / 3 / 2 bricks.

Q: *How many bricks are left?*

BONDS OF SIX

- Teacher holds up, e.g. 2 bricks (out of 6).
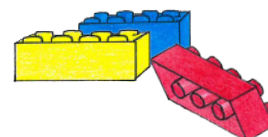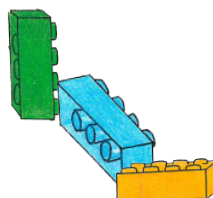- Children find those same 2 bricks and move them to one side.

Q: *Who can be first to say how many bricks are left?*
Q: *Now hide the 4 bricks - what number is missing to make 6?*

- Repeat the exercise, using different numbers. (1 - 6)

Variations:
- Children work with a partner to do addition and subtraction bonds of 7 / 8 / 9 / 10.

HOW MANY BRICKS IN THE BOX?

- Work in groups of 2 / 3 / 4 / 5 / 6 depending on the children's level and the number of bricks you require for this exercise.
- Teacher and 2 / 3 / 4 / 5 ... children place their bricks in a box and count them out, e.g. 18 bricks. Children check and count that there are 18.
- Teacher covers the box.
- One child from the group comes to the box and takes out any number of bricks, e.g. five, and holds them up for the group to see.

Q: *How many bricks are still in the box? (13)*
Q: *If there are 13 in the box, how many are out of the box? (5)*

- Children try to answer and then check to see if they are correct. Tip out and count the remaining bricks.
- Teacher can do this activity a few times with each number; each child that comes to the box takes out a different number of bricks.

Variations:
- Do this activity with any of the numbers that need reinforcing and to practise addition and subtraction bonds.

HOW MANY?

- 2 children sit opposite each other with any 4 bricks in their lap.
- Child No. 1 picks up any number of bricks (from the 4 bricks) using both left and right hands and holds them behind his / her back.
- Child No. 1 reveals the contents of the right hand, while Child No. 2 looks at how many there are. He / She then tries to guess how many are still hiding in No. 1's left hand - then calls out an answer.
- Child No. 1 then reveals his left hand contents - if Child No. 2 is correct, he / she gets a turn.

Variations:
- Work with 5 and 6 bricks.
- Use the studs on the bricks to make larger numbers and incorporate multiplication.

ADDITION & SUBTRACTION WITH DICE

For this activity you will need dice.

- Children work in pairs within a group of 6, with all bricks piled in the middle. Each pair must have two dice.
- Both children each take one dice. They must each throw their dice and say the number as it is shown on the dice.
- Each child uses bricks to build the number shown on their dice. The pair then adds the bricks together and figure out the answer.
- Children must break their number up before throwing the dice again.
- See how many sums you can do in a certain amount of time.

Variations:
- Work in pairs with 2 dice - stack your bricks together.
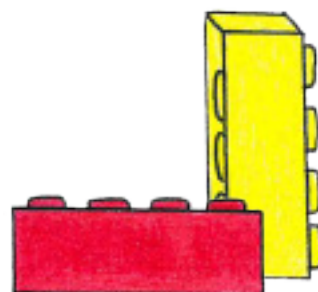- Each child throws a dice - add the two numbers.

$3+3=6$

2 X TABLE

- Place your 6 bricks next to each other in a row.
- Count the studs in groups of 2. Use your fingers to touch the studs as you count.

Q: *How many groups of 2 on one brick?*
Q: *How many groups of 2 are there in 2 / 3 / 4 / 5 / 6 bricks?*
Q: *Can you count in 2s up to 24?*

- Complete repeated addition counting activity. i.e. 2 + 2 + 2 + 2

BAR GRAPH

- Children have their 6 bricks, loose on their desk.
- Teacher gives the children 6 different options / choices / data, and explains how each colour represents data, e.g.

- Which is your favourite colour of the 6 bricks? Each child chooses one brick colour.
- Which mode of transport do you use to come to school? (6 options - each option is represented by a colour brick e.g. car = blue brick, etc.)
- Which is your favourite pet / wild animal / bird? (6 options - each option is represented by a colour brick)
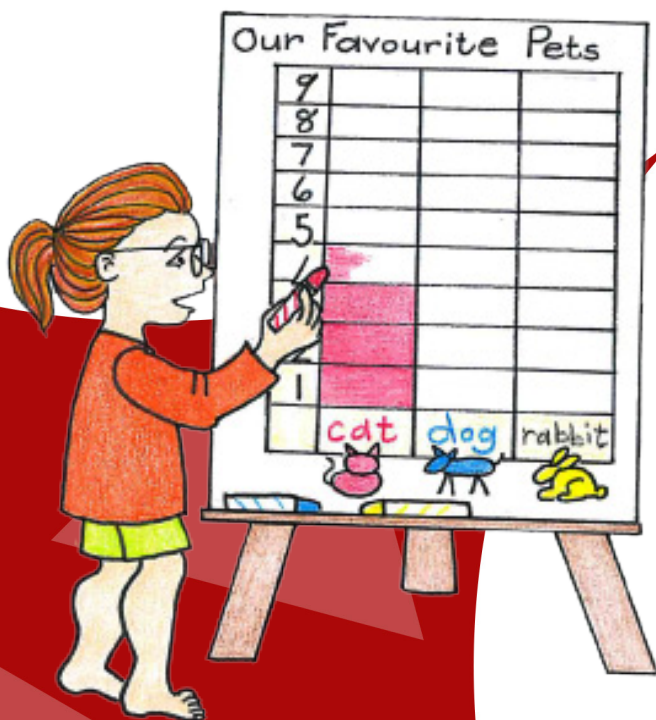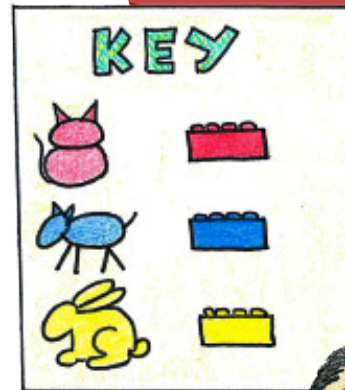
- Once children have made their choice they then group themselves, i.e. all the children who like the blue colour go stand together in the front of the classroom, all the children who like the yellow colour go stand at the back of the classroom, etc.

- Children see that their coloured brick represents their choice. Children then stack all the bricks in their group together.
- Each group places their stack alongside the other groups' stacks to form a bar graph.

Q: Which group / bar is the highest / shortest / most / least?

- Move from 3D to 2D by letting the children trace around the DUPLO stacks to create their own bar graph on paper.
- To extend further, let the children draw the bar graph on quad paper.

COLOUR CAPERS

- Work with a partner; both children have their 6 bricks randomly spread in front of them.
- Look at the colours your friend is wearing. Build a tower of colours according to your friend's clothes - start at the feet and work your way up.
- Describe the tower to your friend, e.g. blue shoes, red pants, yellow t-shirt, etc.
- Swop over.

Variations:

- Extend to a group activity in which children work in groups of 4 - 6. All pile the 6 bricks into the middle.
- Build a graph of colours being worn on any 3 members of that group.
- Leader controls the count - let's see how many times red is being worn? Children count and collect the number of red bricks needed, etc. until all the colours have been dealt with.
- Collect and place the bricks so as to create a graph.

Q: *Which colour is the most / least prominent today in those 3 children?*

COUNT iN TWOS

- Teacher instructs the children to place any 1 brick in front of them.
- Now build a shape covering firstly, any 2 studs.
- Next cover any 4 studs (keeping the model stable at all times).
- Then cover any 6 studs; then 8 studs.

Variations:

- Work with a partner and take turns to build in 2s, as above, this time with 12 bricks.
- As you reach the numbers past 8, you will need 2 bricks to cover, e.g. 10, 12, 14.
- Work in 3s -16, 18, etc.
- Work in 4s - 20, 22, etc.
- Variations of this activity - cover 3, 6, 9 studs.
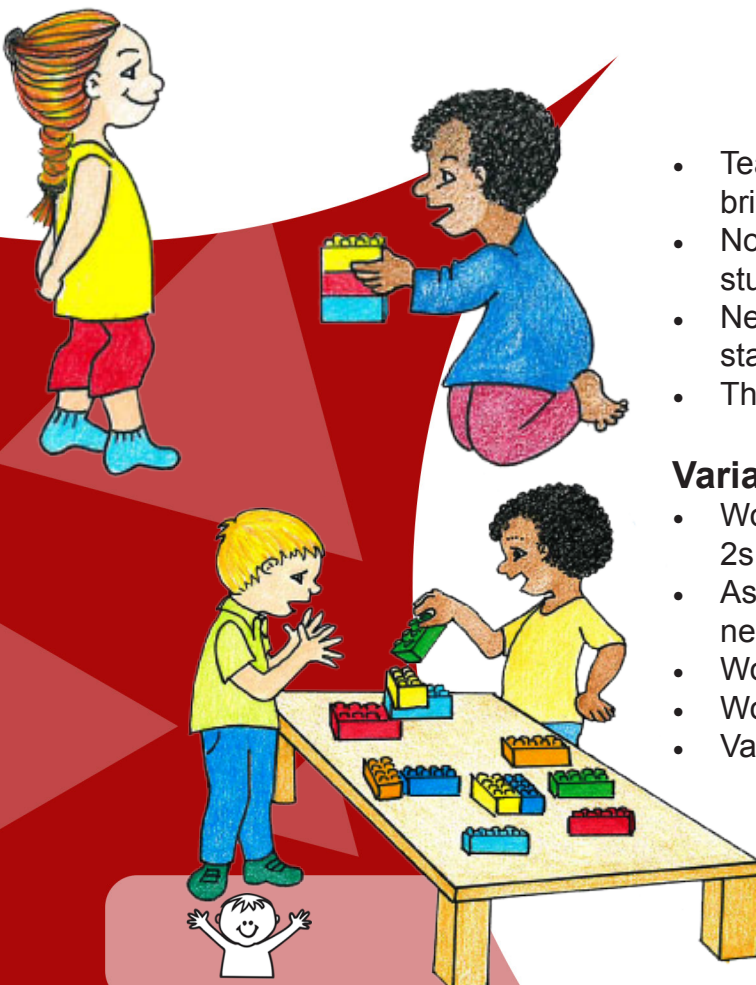
DOUBLING AND HALVING

- Children work with a partner. Each have their 6 bricks randomly placed on the desk.
- Teacher calls out any number (up to 6), e.g. 2. Children must place any 2 bricks in front of them.
- Teacher calls out either "double" or "halve".
- Child performs the action of either placing 2 bricks to double, or remove a brick to halve.
- Teacher calls out the answer - double is 4 bricks and half is 1 brick.
- In the case of halving 3 or 5 bricks, the children can show where the half would be. (answer 1½ or 2½ bricks)

Variations:
- Work in groups of 4 to 6 to halve and double larger numbers.
- The same activity, except use the studs to halve or double. E.g. How many studs is half / double using 2 bricks?

DOUBLING AND HALVING WITH DICE

For this activity you will need dice.

- Children work in groups of 6 and place their bricks in a pile together. Select one child to start the game with a dice.
- The first child throws the dice and says the number that is shown. He / She then builds the number using DUPLO bricks. E.g. dice shows 4. Place 4 bricks in a row.
- The second child finds and matches the number of DUPLO bricks - doubling the number of bricks.
- The child must then say the number of bricks. E.g. The child places another row of bricks next to the original 4. 4 + 4 is 8. 8 is double. 4 is half of 8.
- The game continues until each child has had 3 or 4 turns to throw the dice and to build the double.
- The game can be extended by using 2 dice.

Variations:
- One dice could have double / half. The other dice could have numbers. Throw both dice - whatever number comes up do the action indicated on the other dice.

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COVER UP

- Children work individually with their 6 bricks.
- Teacher gives the following instructions:

- Place a blue brick on the table.
- Cover 2 studs on the blue brick with the red brick.
- Cover another 2 studs on the blue brick with yellow brick - without your model falling over.
- Use the green brick to cover 3 studs on either of the top 2 bricks (not on the blue brick). The model must not fall over.
- Use the orange brick to cover 4 studs on the green brick. The model must not fall over.
- Take your last brick and cover 2 bricks on the orange brick so that the model doesn't fall over.

Q: *Where you able to complete the task?*
Q: *Did your model fall over?*
Q: *Can you work out how many studs are covered in total?*

COVER UP TWO

- Children work individually with their 6 bricks.
- Teacher gives the following instructions:

- You are going to cover up all 8 studs on one brick.
- Place a blue brick on the table in front of you.
- Using the red brick cover 2 studs on the blue brick.
- Using the yellow brick cover 4 studs on the blue brick.
- Using the orange brick cover 2 studs on the blue brick.
- If you cannot complete the last step can you make a change to one other brick to complete the activity?

Q: *How many studs have you covered on the blue brick?*
Q: *Can you look at the models your friends have built?*
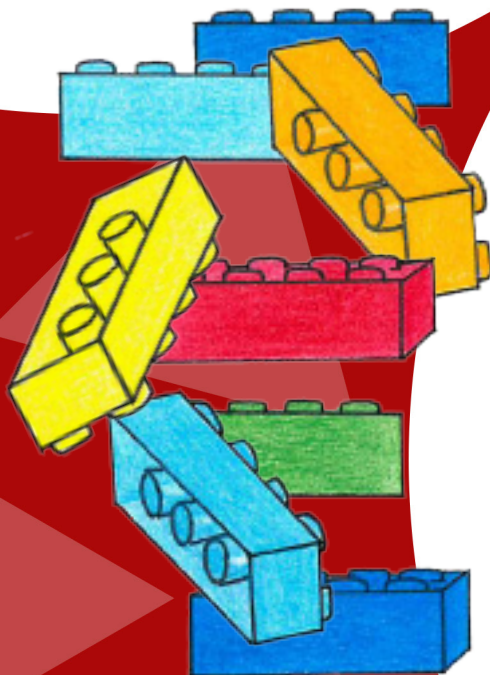Q: *Are they the same shape?*

Repeat activity but cover 5 studs.

- Place a green brick on the table in front of you.
- Using the blue brick cover 2 studs on the green brick so that the model doesn't fall over.
- Using the yellow brick, cover 1 stud on the green brick.
- Using the red brick, cover 4 studs on the green brick.

    Q: How many studs have you covered on the green brick?
    Q: How many studs are not covered?
    Q: Can you look at the models your friends have built?
    Q: Are they the same shape?

Repeat activity but cover 4 studs.

- Place an orange brick on the table in front of you.
- Using the yellow brick cover 3 studs on the orange brick.
- Using the red brick cover 1 stud on the orange brick so that you form the capital letter "L".

Q: How many studs have you covered on the orange brick?
Q: How many studs are not covered?
Q: Can you look at the models your friends have built?
Q: Are they the same shape?

Repeat activity but cover 3 studs.

- Place an orange brick on the table in front of you.
- Using the green brick cover 2 studs on the orange brick so that the model over-balances.
- Using the yellow brick cover 1 stud on the green brick so that you balance the model and it stands without falling over.

Q: How many studs have you covered on the orange brick?
Q: How many studs are not covered?
Q: How many studs are covered on the green brick?
Q: How many studs are not covered on the green brick?
Q: Can you look at the models your friends have built?

STUD NUMBER

- Group your 6 bricks in twos.

Q: How many groups of 2 can you make?
Q: Can you make 2 groups of three?

- Look carefully at one brick.

Q: How many studs are there on that brick?
Q: How many studs on 2 / 3 / 4 / 5 / 6 bricks?

TWO STUD TRICK

- Children must connect their bricks vertically, connecting by two studs only. No two bricks may be connected in the same way.
- See how far you can go up before your tower collapses.
- Work out where to place your bricks so as to balance the model.

MULTIPLES

- Children work in groups of 4, each bringing their 6 bricks to the play space.
- Work with a partner in the group of 4, and build your colours into groups of 2, as quickly as you can. (2 reds / 2 greens / 2 blues / etc.)

Q: How many groups of 2 do you have?
Q: Can you count your bricks in 2s?
Q: How many bricks did you count?

Variations:
- Combine your grouped colours with the other 2 partners to create groups of 4. (4 red / 4 greens / etc.)

Q: How many groups of 4 do you have?
Q: Can you count in 4s to say how many bricks you have altogether? (24 / 4 x 6)
Q: How many 2s are found in 4 / 8 / 12 / 16 / 20 / 24 ?
Q: How many 4s are found in 4 / 8 / 12 / 16 / 20 / 24 ?

- Work in groups of 3 and do grouping in 3s.
- Work in groups of 5 and do grouping in 5s.
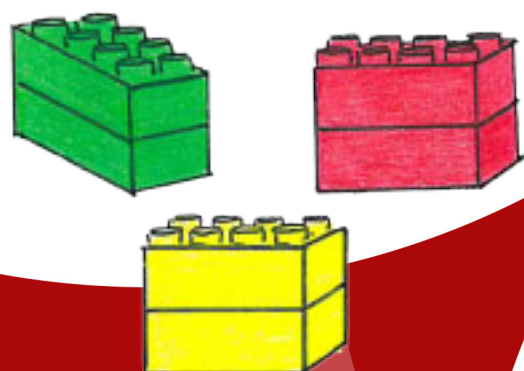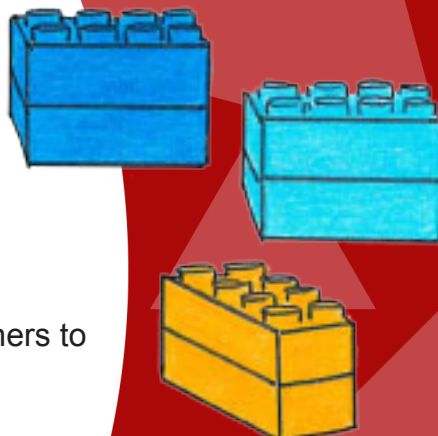
PROBLEM SOLVING

- Children work in groups of 2 / 3 / 4 depending on the number range you are using.
- Teacher reads out a problem. Children listen then discuss with their group what the equation will be.
- E.g. Max has 6 sweets. How many more does he need to have 12?
- Group decides on equation of either 12 – 6 = ? or 6 + ? = 12
- Children use their bricks as concrete apparatus to work out the answer.
- Each group shares their answer.
- Various problem-solving activities can be practised daily.

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MULTIPLE OPERATIONS

- Children work in groups of 4 - 6.
- Place the bricks in the middle of the group.
- The teacher calls out an equation using 2 / 3 / 4 operations.
- The group must build the equation as the teacher calls it out.
- e.g. 2 + 5 + 3 ; 5 – 4 + 2 ;   10 + 2 – 6 – 1
- The teacher can compare the answers from each group.

MATHS OPERATIONS GAME

For this activity you will need dice, white boards or paper.

- Children work in groups of 4 - 6. Each of their 6 bricks is placed in the middle of the play area.
- Each group must also have 2 number dice.
- The children may also use a white board or piece of paper to work out the equations.
- One child begins the game by taking a number of bricks (without counting) and places them in front of him / her. The group then count the bricks. E.g. the number of bricks taken is 12.
- The same child now throws both dice.
- Using the 2 numbers on the dice and any operation, the children are given 30 - 60 seconds to find an answer closest to 12.
- The child that has the correct equation and answer closest to the given number is declared the winner of that round.

 Variations:
- Increase the number of dice to 3 or 4, to make the equations more difficult.

GUESS THE NUMBER 1

- Children work in groups of 6.
- The objective of the game is to see which child can guess the total number of bricks.
- In a group of 6 children the highest number of bricks will be 6 x 6 = 36.
- Each child must stack their bricks and place them on their laps, under the table, so that the other children cannot see them. Each child then snaps off either 0 to 6 bricks and places them in the right hand. (Hide these from the rest of the group.)
- Once each child has their selected number of bricks in their right hand they then guess what the total number of bricks (from all children) will be. They say this number out to the group.
- Each child, one by one, reveals the number of bricks in their right hand. The group will count the number all together.
- The child whose guess is the closest is the winner. The winner of each game places one brick in front of them and this represents the number of times he / she has won. It also now reduces the total number of bricks in the game and children will have to use subtraction and addition to ultimately guess the number of bricks in everyone's right hand.
- Each time a child wins, he / she will place a brick on the table in a stack.
- The first child in the class to have 6 bricks stacked is the ultimate winner of the game.

GUESS THE NUMBER 2

- Children work in groups of 4 - 6
- Each child has 2 bricks in their lap, unseen by the others in the group.
- Each child covers any number of studs on the bottom brick using the other brick.
- Children take turns to guess how many studs have been covered by the whole group.
- Play a couple of rounds before determining the champion!

GROOVY GRID

- Children place 4 bricks on their desk as shown in the picture on the right. (colour is irrelevant)
- Using an X and Y axis, the children can visualise their times tables.
- Allow the children to work with a piece of wool to circle the number they are working out.
- Assist learners in noticing the patterns in the bricks and the visual constancy of the number form.
- When working with bigger numbers, pair up with a partner or work in threes.
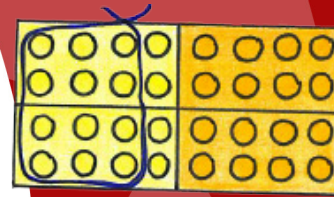
$4 \times 3 = 12$
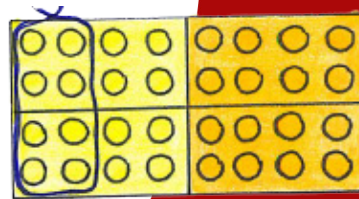
$4 \times 2 = 8$

FEED THE HUNGRY CROCODILE

- All the children place their bricks in a pile in front of the classroom
- Teacher decorates a shoebox to look like a crocodile. There should be an opening at either end.
- Teacher puts her arm through the opening at the back - her hand being the "mouth" of the croc, peeping out at the other end.
- She asks the children to feed her bricks (fish). E.g. Tommy, please give me 2 red fish … / Give me 3+2 yellow fish / Give me 3 green + 4 blue fish … Etc.
- The children must listen for their name, how many and what colour bricks to give the hungry crocodile.

SHOWING TiME

- Children work individually with 3 of their bricks.
- The children must create a "long / minute hand" with 2 bricks and the "hour hand" with one brick.
- Teacher calls out the time, e.g. 3 o'clock.
- The children must use their bricks to show the position of the "hands".
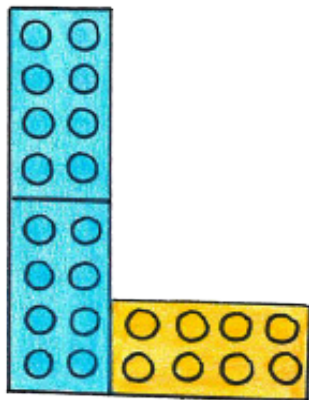
3 o'clock

TALLEST TOWER

- Children work in a large group (8 - 10) to build the tallest, strongest tower that they can in 1 minute.
- The children have to vary the ways in which bricks are added by clicking the bricks in different directions or using a different number of studs to attach bricks.
- Teacher says "Go!" and they work as a team to build.
- When Teacher says "Hands off!" the groups stop building.
- Compare the towers - who has the tallest; smallest?

Q: *How many bricks have you used?*
Q: *Which one is the strongest? You can test by picking up the tower and tilting it to see which group's tower stays intact the longest.*

Variations:
- Build a tower using only 1 / 2 / 3 colours.
- Build a tower which is patterned and then explain the pattern.
- Build a tower incorporating spaces.

SNAKES ALIVE!

- Children work in a large group (8 - 10) to build the longest snake in one minute.
- Create movement in your snake - be able to explain your model.
- How many yellow / blue / green … bricks have you used in your snake?
- How many bricks used altogether?
- Can you combine all the snakes to make one very long snake?
- Can you build a snake that will be camouflaged in the long grass? What colours will you use?
- Can you describe your snake and tell the class something about your build?
- Can you build a snake that can curl up and uncurl?

Variations:
- Build a snake using only 2 / 3 colours.
- Build a patterned snake.
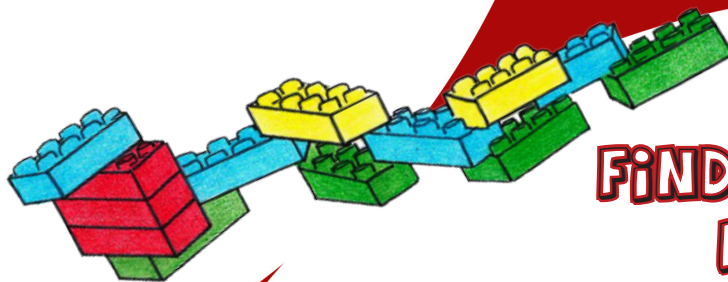
FIND THAT POSITION

- Children have their 6 bricks, loose on their desk.
- Teacher builds any sequence with 3 bricks.
- Teacher asks the children: Can you copy me?
- Children select the same colours and build the same sequence.

Q: Which colour is 1st / 2nd / 3rd? (left to right)
Q: Which colour comes before red / yellow; after blue / red?
Q: Which colour is in the middle?

- This activity can be repeated using 4 / 5 / 6 bricks.
- Teacher can vary the arrangement of the bricks.
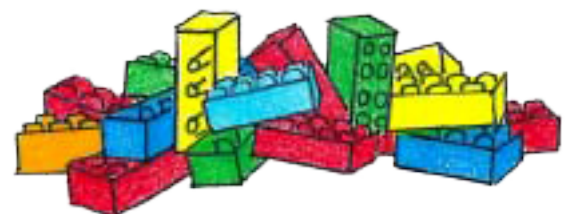
TRANSLATION, ROTATION AND REFLECTION

- Ask the children to build the following shapes and then state whether the shapes have been translated, rotated or reflected.
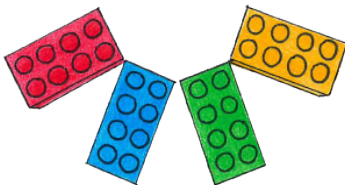
1.   (translation)

2.   (rotation)
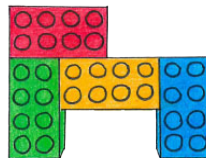
3.   (rotation)
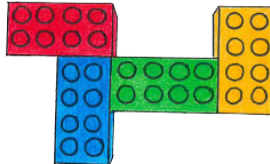
4. (rotation)

5. (reflection)
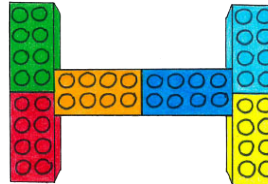
ROTATION

Rotation means turning around a centre point.

- Working in groups of 4, the children work with their 6 bricks.
- The first child uses 2 bricks to create a structure.
- The 2nd child then rotates the structure and uses his / her own bricks to build the rotation.
- The 3rd and 4th child then rotate the structure a further 90 degrees each - thus showing a full rotation.
- This exercise can be done in a clockwise or anti-clockwise rotation.
- Similar activities can be done using more than 2 bricks.
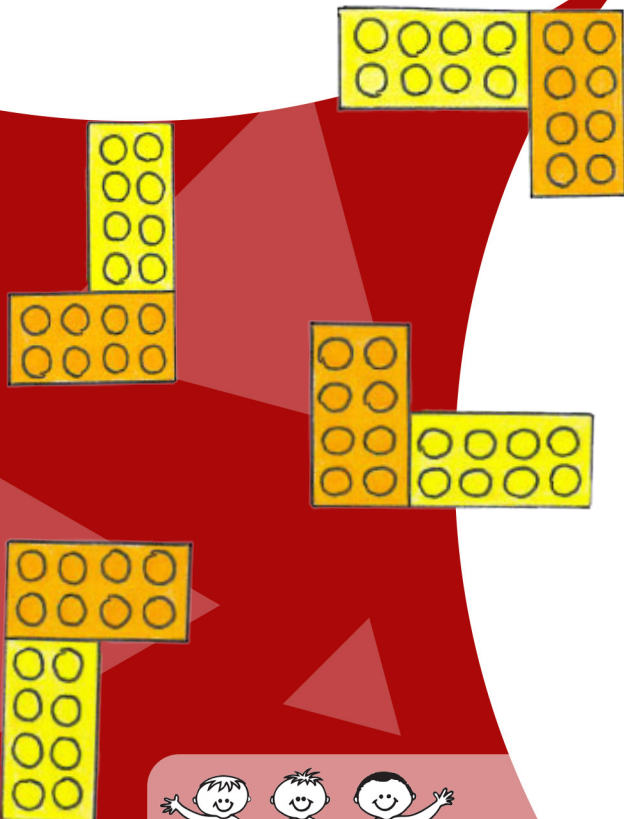
REFLECTiON

We see reflections all around us - in mirrors and glass.   When we flip a structure / object we are able to see the reflection.

- Working in groups of 4, the children work with their 6 bricks.
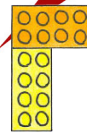- The first child uses 2 bricks to create a structure.

The 2nd child then reflects the structure and uses his own bricks to build the reflection.

The 3rd and 4th child then reflect the structure again.

This activity can be done using more than 2 bricks. You can also use the bricks in various positional and spatial structures.
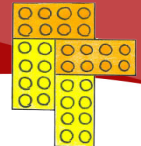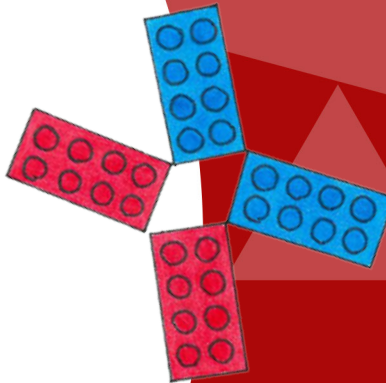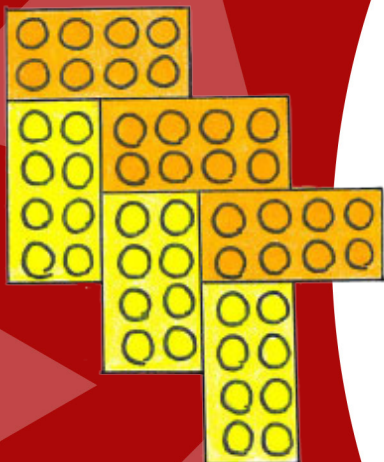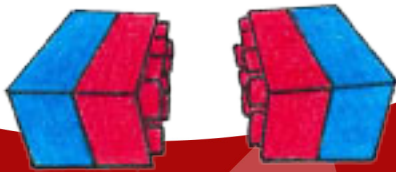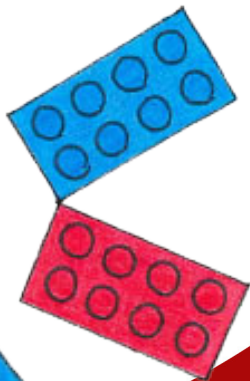
TRANSLATiON

Translation means moving without rotating or flipping - sliding. When translating, every point of an object / shape must be in the same direction and distance.

- Working in groups of 4, the children work with their 6 bricks.
- The first child uses 2 bricks to create a
- structure / shape, e.g. L shape

The 2nd child then translates the structure and uses his / her own bricks to build the translation.

The 3rd and 4th child continue with the translation of the structure.

This activity can be done using more than 2 bricks. You can also use the bricks in various positional and spatial structures.
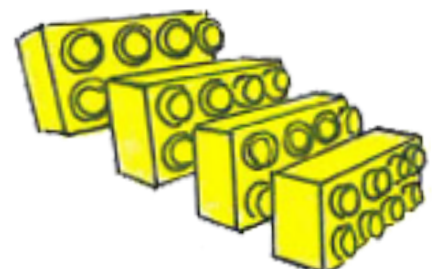
PATTERNING 1

- Working in groups of 4, the children work with their 6 bricks.
- The children do not need to worry about the colours of the bricks.
- Build the first 2 parts of the pattern as shown below.
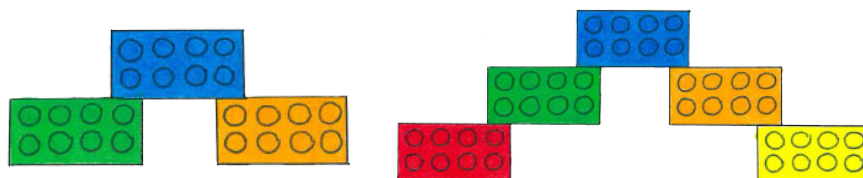
- The children must then build the next 2 parts to the pattern. (They will have used all 24 bricks.)

Q: How many bricks in the first shape? (2nd shape, 3rd shape, 4th shape)
Q: How many bricks would be in 5th shape? (8th shape, 10th shape)
Q: What is the relationship between the shape and the number of bricks?

PATTERNING 2

- Working in groups of 4, the children work with their 6 bricks.
- The children do not need to worry about the colours of the bricks.
- Each group must build the first part of the pattern as shown on the left (using 3 bricks). They must then add one brick to the top and bottom row.

Q: What is the pattern?
Q: How many extra bricks am I adding to the pattern each time?

- The children must then build the next 2 parts to the pattern.
- The children can then complete a table.
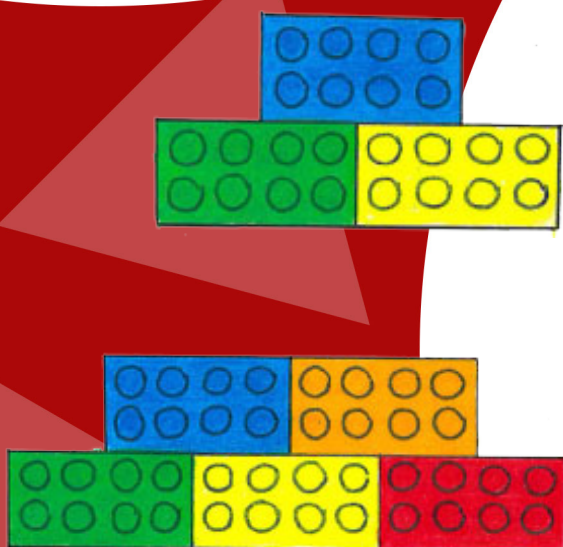
| Pattern number	1	2	3	4	5	6
Number of bricks	3	5				

INTRODUCING VOLUME

- Working in groups of 4, the children work with their 6 bricks.
- The teacher can build a few shapes using 3 - 6 bricks.

Q: *How many bricks are used to build each shape?*

- The children can then work in their groups taking turns to build a shape using 6 - 24 bricks. Once built, the rest of the group must try to work out how many bricks have been used to build the shape.
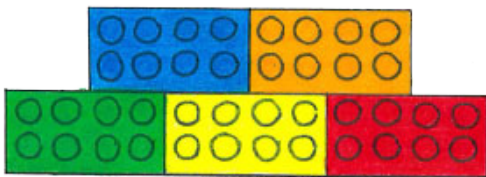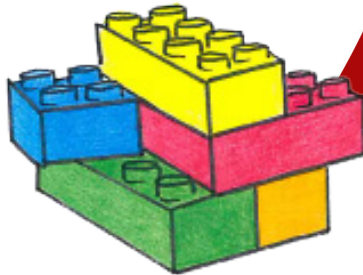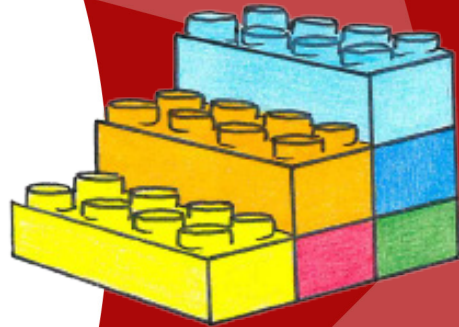
VIEWS FROM DIFFERENT DIRECTIONS AND ANGLES
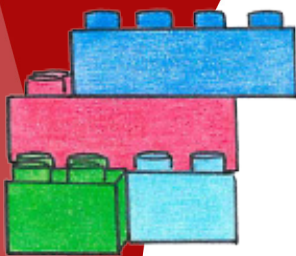
- Working individually or in groups of 4, the children work with their 6 bricks.
- The teacher builds a model using 4 bricks.
- This model is placed at eye level for viewing by the children.
- Children must view the model from 4 different sides (front, back, side left and side right).
- The children can then build the model from each view that they see.
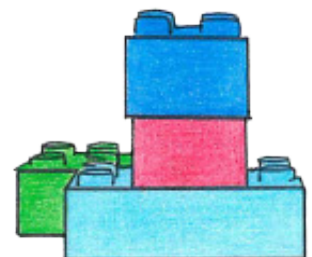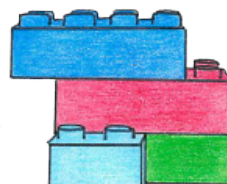
GRID REFERENCING

- Working individually the children use a grid template and their 6 bricks.
- The teacher can place coloured bricks onto various grid positions.
- The children will have to give the grid reference of these bricks. E.g. The blue brick is at A1.

Variations:

- The children start with an empty grid.
- The teacher calls out a colour and a grid reference. E.g. Red D5
- The children must then place the correct coloured brick in the correct grid block.
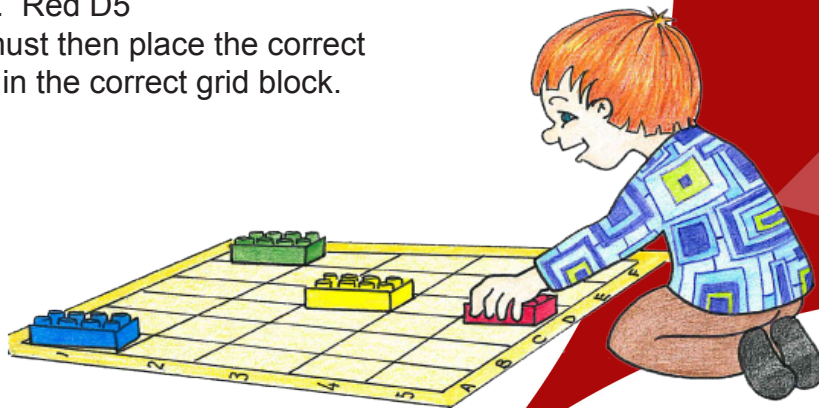
See examples of grid template on this link:
www.handsontech.co.za/6 Bricks.html

SKIP COUNT

- Work in a group of 4 - 6.
- Place your bricks out, in any order, one next to the other; make sure they can be seen by the whole group.
- One child begins counting the bricks out aloud; every time you get to any blue brick, skip that number (do not count it out aloud) and carry on counting from the next brick.

Q: Can you stay on track with the counting?

- Think of other rules to play this game - you could try counting in twos / threes / odds / evens, etc.

FREAKY FRACTIONS

- Work individually.
- The teacher introduces fractions - halves, thirds, quarters, fifths and sixths.
- The child can create and compare their own fractions by covering the grids using their 6 bricks.

Example: Look at the grid with 4 blocks. Cover one quarter / one half / 3 quarters, etc.

- The teacher could also introduce story sums / problem solving.

Example: A whole slab of chocolate has 6 squares. If I ate four sixths of the chocolate how many sixths would I have left?

See examples of grid templates on this link: www.handsontech.co.za/6 Bricks.html

MEASURE UP!

- The children work with a partner.
- Each pair combines their bricks to build a 5 brick ruler.
- Each pair collects a list of things to measure (previously made by teacher).
- The children take their list (could be in pictures if children cannot read yet) and their 5 brick "ruler", and they go and measure the objects.
- They record their findings; discuss and compare their measurements.

Q: *How many bricks to measure the door / table, etc.*
Q: *Which is the longest / shortest object measured?*
Q: *Are any of the objects the same size?*